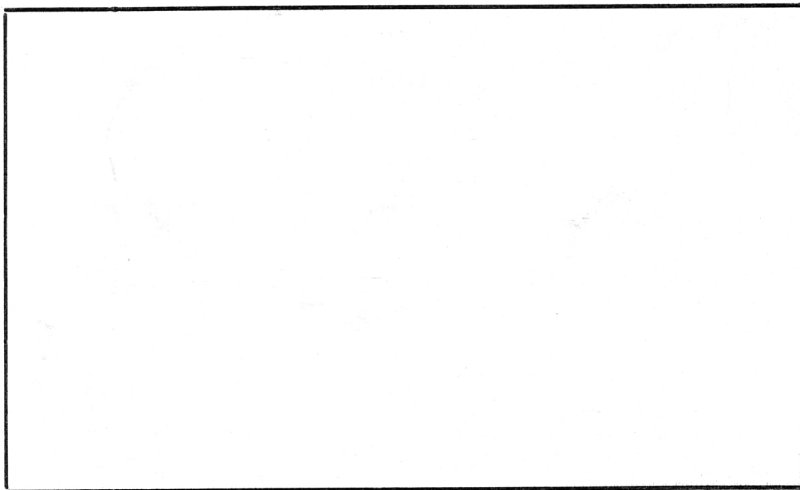


***THE***  
***TECHNICIAN***  
**IN THE**  
**POLICE LABORATORY**



A scientific publication, issued monthly by the Laboratory of the Missouri State Highway Patrol, through the interest and cooperation of police laboratory technicians throughout the country. THE TECHNICIAN is a non-profit, and non-copyrighted bulletin, edited by the personnel of the M.S.H.P. Laboratory.

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#### The Cover

This month's cover is illustrated with the photograph which should have accompanied the article which YOU failed to submit for publication this month. In each of the previous issues of THE TECHNICIAN, we have made a personal request of you, the reader, for material which might be published in these pages. Somehow that material did not reach us. Could it be that you have not been receiving THE TECHNICIAN regularly and were not aware of our request?

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Responsibility for all statements made in material published in this bulletin rests with the author of the particular contribution; neither that material nor the editorial comments appearing herein are to be considered as necessarily reflecting the views or opinions of the Missouri State Highway Patrol, nor the Laboratory of that Department.

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THE TECHNICIAN will be sent free of charge to individuals or departments upon request. Address all correspondence to THE TECHNICIAN, Missouri State Highway Patrol, Jefferson City, Missouri.

THE TECHNICIAN

Vol. 1, No. 7 - November 1943

CONTENTS

	Page
An Editorial Note. . . . .	3
the Editor.	
State Police Laboratories. . . . .	9
by John E. Davis, Laboratory Technician, M.S.H.P.	
Technical Note . . . . .	21
(1) Microfile in Photomicrography.	
Questions and Answers. . . . .	22
Chemical Microscopy. . . . .	23
Of Interest. . . . .	27
the Editor.	

An Editorial Note:

One of the primary aims of this publication, as has been stated from time to time in preceding issues, is the formation of an organization or society which will represent the police laboratory technician and his interests. Considering the present international situation, it is not advisable that we take definite steps toward such organization. However, it is essential that a ground-work be laid for that society in advance. We should be most grateful for any and all expressions of ideas which any of our readers may have in regard to what should be done, and how.

The society itself should have certain definite functions and objectives. Among these would be

- (a) To facilitate the dissemination of information between members.
- (b) To bring about a closer cooperation between the different laboratory workers and their departments.
- (c) Raising the standards of the profession generally, by
  - (1) Setting up a definite system of terminology and nomenclature to be used in designating the different classes of workers in Police Laboratories.
  - (2) Establishing definite qualification standards which must be met by these technicians, and issuing certificates where (and only where) these qualifications have been met.
  - (3) Establishing uniform and meaningful requirements to be met by applicants to positions in Police Laboratories. Standardiza-



tion of tests.

- (4) Formulation of rigid "rules and regulations" of practice in regard to testing methods, court testimony, etc.
- (5) Establishing "Accepted Testing Methods and Procedures", (comparable to the A.O.A.C. methods) and enforcing their use where court testimony will be offered.
- (6) Promotion of educational programs within institutions of higher learning, and within the society itself, in regard to technical police laboratory science.
- (7) Establishing uniform methods of reporting, filing, etc. insofar as is practical.
- (8) Setting up certain minimum standards in wages, hours, working conditions, etc., and maintaining them by a close cooperation between members.

- - -

We have already presented one or two comments on the terminology to be used in designating these laboratory workers. To date, but little comment has been received by the Editor in regard to those views which were presented.

It is unfortunate that so slight a reaction should be obtained from our request for opinions on such an important matter. It is true, of course, that, taken by itself, any one of these factors might be considered of no great importance. It is not a life or death matter as to whether we call ourselves SCIENTIFIC CRIMINAL INVESTIGATORS, or "forensic chemists"; whether we call a man a DOCUMENT EXAMINER, or "document expert". It is important, however, that a definite response be obtained from our discussions of it. For only by having a representative viewpoint, and only by having an enthusiastic reaction will any appreciable advancement be realized.

The following is taken from a letter received by the Editor in regard to the discussion on the terminology to be applied to police laboratory workers, presented in the September TECHNICIAN: " - - - - - , so what difference does it make what your title is? When that distant day arrives when we will have to prove our qualifications before we receive a title, the situation will be different (and better), but I think that day is a long way off."

It is true that it will probably be some time before our objective in this respect will be realized. But must we take so pessimistic a view as to prevent our even attempting to overcome the situation? Are not the advantages to be associated with organization and standardization worth the effort necessary to their realization? If the advantages are worth the effort, then is it wise to permit indifference and apathy to hinder our progress?

Consider your own position for a moment. Have you nothing to offer the field which will aid its advancement?

Hardly more than half a dozen police laboratory workers have contributed material for publication in THE TECHNICIAN: not more than a dozen have volunteered concrete expressions of opinion in regard to questions brought out in this section of the booklet.

Must the entire burden of the organization of a society and the formulation of its objectives rest on the shoulders of such a small part of the entire field?

- - -

Of the objectives which our society should have, some of which have been set forth above, we have thus far accomplished only a few, and those in a very minor degree. Through this publication we facilitate the dissemination of information, ideas, and opinions between the various laboratory workers. But, as previously stated, those views expressed have been representative of only a small part of

the field. We have brought about a closer cooperation between the different laboratory workers and their departments. This too, has been realized on a small scale, but has proved highly profitable to those concerned, from a number of standpoints. We have initiated a discussion on the nomenclature to be applied to members of the profession.

If it were practical to hold a meeting of police laboratory technicians, and if that convention were well attended, more could be accomplished in a week than could be accomplished by THE TECHNICIAN in months. As it is, we must continue our "activities" through correspondence, and this bulletin.

One of the first steps which would have to be taken if a society should be formed, would be the setting up of definite qualification standards in the profession, and in the establishing of uniform and meaningful requirements to be met by those individuals entering the field.

For purposes of discussion, let us assume that the terminology (nomenclature to be used in designating the various laboratory workers) outlined in the September TECHNICIAN (with modifications since prepared) is acceptable and passed upon by members of our Society. It is obvious that the requirements which should be met by an individual desiring employment in a police laboratory as a "Police Laboratory Assistant", are less than those needed by a man applying for a position which calls for the services of a "Police Laboratory Technician", or a "Scientific Criminal Investigator". Fortunately, the divisions between these three classifications are fairly clear-cut (as regards the scope and nature of the work which would have to be performed by the technician so employed) and it should be possible to formulate tests which would satisfactorily indicate the ability of the applicant to handle the position.

The procedures presently followed by the various de-

partments in selecting their technicians are singularly lacking in uniformity. Some give a civil service examination; others give no test at all. In some instances little or no consideration is given to the educational background of the man, whereas in another department, education may play a major part in the decision. Some agencies will not employ a man in the laboratory unless he has first been maintained by the department for a certain length of time as a uniformed patrolman. Many departments do not look for technical ability outside their department at all, but rather merely select that individual who already just happens to be on the department payroll, who knows how to use a camera, who has developed fingerprints, or who otherwise may or may not have the true qualifications actually needed for the job. Further, there are relatively few departments who can, or will, take men who have not previously resided in the city, county, or state, for a certain period of time, ranging from one to three years -- a "qualification" totally unrelated to the technical position as such.

Of the departments who give written examinations, probably few of these have truly satisfactory tests, and even these are not accompanied by more than a general interview of the applicant. Relative weight-values assigned to education; experience; ability as measured by written tests, as measured by performance tests; etc. are probably too arbitrary in many instances. Even the questions themselves are likely to be of ancient vintage, prepared and graded by civil service board members who may know little of the actual requirements which SHOULD be met by applicants.

It should not be a too difficult job to formulate a satisfactory test for positions such as these, in which a number of factors (meaningful ones) would be given consideration, and in which weight-values would be properly assigned. The test, and the grading of it, could be made flexible enough to cover the applicant's abilities satisfactorily, and to truly indicate his probable merit.

Would it not be well if we could, through THE TECHNICIAN, and the society which we hope will develop from it, establish a uniform qualifications standard to be met by applicants to the various positions in this field?

If any of our readers is interested in this problem, and willing to devote a certain amount of time to it, we should appreciate that assistance. We should like to draw up a tentative set of questions and other qualifications which might serve to indicate something of a man's ability and which would give proper weight-values to the various factors included. Questions on the examination could be changed every so often, and the form otherwise kept up-to-date.

This might be submitted to our readers for comment and criticism, after which an attempt would be made to have the form adopted by the various departments, civil service boards, etc. This would require a great deal of time and consideration. There would be many obstacles in the pathway toward our having it accepted and put into use. However, your Editor believes that it can be done, is practical, and worthwhile. It would, if carried through be the first major "success" of our society. Are you willing to help?

- # -

## STATE POLICE LABORATORIES

By John E. Davis

Technician with the Laboratory of the Missouri  
State Highway Patrol

ED. NOTE: In September, 1940, while attending the University of California, the writer prepared a term-paper for a course in Police Science presented by Professor O. W. Wilson. This paper represented the results of a questionnaire-survey of the various State Police Laboratories, and while at the present time the material may not be quite representative of the same laboratories, it is felt that the information obtained through that survey will be of some interest to our readers.

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The topic of this article has already been explained in the editorial note presented above. However, a few additional comments are in order.

Although the higher educational institutions throughout the country are becoming more and more aware of the importance of police science and its place in our social organization, as yet, relatively few of the universities and colleges have instituted courses in subjects immediately related to that field. Particularly is this true in regard to the more technical aspects of criminology. Under the Political Science departments of the various schools, courses are offered in Police Administration, Organization, etc. Yet there has been very little effort expended toward the establishment of courses in police laboratory technique. There are various reasons for this situation. One of these is the fact that there are so few persons interested in the technical laboratory phases of police work among the students of the average university. The college freshman usu-

ally has a course of study in mind even during his first year. Whether he has or not, it would probably not even occur to him to take up courses of study in Police Laboratory Science, even if they were offered by the college. He is aware that there are such technicians, but, generally speaking, this is as far as his knowledge goes in that respect. A second reason for the limited educational facilities provided this subject is to be found in the fact that, for the most part, a broad background in science courses already offered is sufficient to care for the needs of these students, and that part which is not so covered may be considered "too practical" to be presented in a University (which is generally considered to be devoted to the teaching of theories, principles, etc. rather than specific techniques applicable to a certain particular field.) In those instances in which such subjects are taught, it is usually through the efforts of one or a few members of the faculty who just happen to be interested in it, and who are willing to devote their time to a consideration of it.

Under these circumstances it becomes difficult for the student to obtain a satisfactory background in Police Laboratory Technique and its various ramifications. The principles of testing "unknowns", of using the microscope--possibly the camera--of searching for evidence, and even of analyzing certain types, may be learned. But there is often little or no opportunity to obtain actual experience even in seeing, much less testing, actual case-work blood stains, seminal stains, etc. etc. Admittedly, case-work is based on the same theories as are the procedures carried out on "known" specimens and prepared "unknowns", but every police laboratory technician is aware of the great variation in the nature of physical evidence and the originality and ingenuity so often called for in the examinations necessitated thereby. Only education, plus practical experience, can produce the "finished" laboratory technician.

- - -

During the three years from 1938 to 1941 there existed

on the Campus of the University of California at Berkeley, a small group of students interested in the various phases of police science, and who had organized into the "U. C. Criminology Club". One of the functions of that club was to obtain speakers from the outside who could present to the students material which was not available in the regular University courses. Lectures and demonstrations were presented by prominent men in the field, and there was thus afforded some opportunity for the student to broaden his knowledge of the practical problems which he might expect to encounter later on.

Being a very small group in itself, the students of "Technical Criminology" within that organization eventually formed a branch club of their own in order that information along more technical lines might be obtained. While this group was not in existence long enough to accomplish a great deal, it did bring to the attention of some of the members the need for more practical information along various lines of the work.

In addition to a lack of opportunity to obtain sufficient practical "extra curricular" experience, (some case-work was provided, as was experience in visiting scenes of offences, etc., but both in decidedly insufficient amounts) most of us did not know what opportunities were available in the field itself. We were not informed as to the requirements which we might be expected to meet, of where positions in this field might be obtained, of the salary range offered, of the facilities available in the different departments, of the attitude which existed toward "college trained police technicians", etc.

As a result, the writer, combining the necessity for writing a course term-paper with a desire for such specific information, in September of 1940 prepared a questionnaire which was sent to the State Police of each of the forty eight states. With the form was submitted a letter, explaining the reasons for which the information was sought, and requesting that it be filled out and returned to the



writer.

The author's original plan was to analyze the answers given on these forms, and to tabulate the facts ascertained into a comprehensive report which would indicate directly just what the character of the various State Police Laboratories was. However, it became apparent on reviewing the returned forms that such tabulation was not practical, and would be rather meaningless, considering the brevity with which many of the questions were answered, and the fact that so many went completely unanswered. Also, it was realized later that the questions, calling as they did for short answers, did not permit sufficiently consistent interpretation of them and the replies received.

It has been the desire of the writer for some time to present that little information which was so obtained to those laboratories who cooperated with him in regard to this survey. Through THE TECHNICIAN this is now conveniently possible.

In order that the reader may better interpret the remarks to be presented, a duplicate of that questionnaire form which was used in this survey, is enclosed.

As stated, forty-eight of these questionnaires were sent out. Of these, replies (returned forms and/or letters) were received from only twenty-seven of the states. It was interesting to note the reception with which this questionnaire was met. Obviously twenty-seven out of forty-eight states was not a very good average. For some reason or other, a number of departments did not regard the form worth filling out, or for some other reason did not wish to furnish the requested data. Of those who did, some gave but brief and unsatisfactory answers -- others gave very good replies accompanied by additional remarks, and expressed an interest in what we were attempting to do.

- - -

The first question asked, was the most important in indicating what might be expected from the remainder. That question asked "Does your state maintain a laboratory for technical criminological investigations?"

In reply, ELEVEN of the twenty-seven states reported that they had no departmental laboratory facilities whatsoever. These were: Alabama, Florida, Wyoming, Delaware, Connecticut, Maryland, Colorado, Virginia, Vermont, Nevada, and Oklahoma.(1)

SIXTEEN of the twenty-seven reporting states indicated that they did have a laboratory of some nature, ranging in some to a partially equipped "part-time" laboratory, to others having fully equipped and well-staffed laboratories.

These sixteen reporting states were: Pennsylvania, Utah, Minnesota, New Mexico, Missouri, Kentucky (?), Texas, Michigan, Kansas, West Virginia, Ohio, Rhode Island, North Carolina, New York, Indiana, and Massachusetts.

Up to the time of the survey (September, 1940) in only one of the ELEVEN states not having a laboratory had there ever been a major attempt to have one established. That was in the Virginia State Police Department.

Inasmuch as there are fewer answers to consider in regard to these first ELEVEN states, it might be well to briefly mention the reports received from them, and then turn to the remaining SIXTEEN states.

The answers, even to appropriate questions, received from these states were brief and not very informative. However, the main reasons listed for the absence of laboratories in these departments were: Proximity to University facilities where the work could be done; Utilization of F.B. I. resources either because of proximity or lack of appropriations for local facilities; and also, growing out of lack of appropriations, recourse to private laboratories; and in one instance, utilization of the facilities and

services of the laboratory of a neighboring State Police Laboratory. Lack of appropriations, accompanied by a lack of interest in obtaining such facilities, either (as stated in some of the reports) because of ignorance on the part of the state law enforcement officials of the values to be associated with local laboratories, or merely because of a lack of sufficient enthusiasm and interest among those who could better the situation, seems to account for the absence of laboratories in most of these states, with a "lack of need" holding second place.

As to the need for such a laboratory, four states failed to comment, two said they need none, one did not know, and four stated that they did think a laboratory would be a worth-while institution. Of the latter, such a statement as "We hope to eventually have such a set-up in our state; however, we have neither the funds nor equipment with which to operate" -- graphically illustrate the unfortunate position in which some of our state Police officials find themselves.

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Let us now consider the replies to some of the questions answered by the sixteen states who report that they have a state police laboratory.

Of these, some have only partially equipped laboratories, and resort to universities, private laboratories, and the F.B.I. for assistance. Specifically, four stated that they had only limited facilities, and were not able to analyze all ordinarily encountered physical evidence. Twelve stated that their laboratories were fully equipped and capable of handling all types of evidence, without outside assistance.

Another interesting question was in regard to the number of technicians employed by these departments.

One man                      -    Three departments

Two men-	-	Four departments
Three men	-	Two departments
Four men	-	Two departments
Seven men	-	Two departments(2)
Ten men	-	One department (2)
Twenty-one men	-	One department (2)
No report	-	One department

- - -

Consideration of the question regarding the minimum, average, and maximum salary paid is also somewhat difficult. Generally speaking, salaries paid for technical ability in police agencies are low, in comparison with wage-scales in other fields of endeavor, calling for like ability, knowledge and skill. This has probably resulted from the originally low salaries paid to the patrolmen themselves. As patrolmen were assigned to "technical" jobs, salaries remained as before. Further, when outside technical skill was finally sought, reasonable salaries seemed "excessive" to the underpaid members of the organization already in existence. The situation in this respect does not seem to have changed a great deal, although some indication of improvement is seen in the fact that in these departments where only uniformed members are placed in the laboratory, they are likely to be given a promotion in rank (and accordingly in salary) with that placement.

Salary ranges shown on the reporting departments were as follows: (Per year) (Not in order across page.)

<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
1320	1620	1800
1740	2100	1800
1800	2200	2100
1800	2400	2100
1920	2400	2400
2000	3500	2400
2100	-	2500

<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>
2100	Others	2520
2160	did not	3040
2400	list an	3540
	average	3600

The minimum salary listed at 1320 per year (and possibly others in any of the groups) is in addition to a yearly subsistence allowance where uniformed patrol members are maintained in the laboratory.

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As to the question asking if the responding laboratory felt that "men especially trained as criminologists would be more satisfactory than chemists etc." a majority said "yes", some said "no", and a few did not reply.

Most of the departments required men with training as chemists. Some of the laboratories were under the directorship of chemists or medical technicians who preferred to train their own police technicians, from the ranks of the Patrol.

As to the methods used in selecting the men, most had civil service examinations. The "merit system" was followed in others, with some using no particular scale or system at all.

Regarding the deficiencies which existed in the applicants to these positions, the Departments were practically unanimous in listing a lack of experience, particularly in regard to the presentation of court testimony, as the major deficiency. Lack of education, and training generally, improper training etc. were listed by almost all. Only one department maintained that there were no deficiencies either in their applicants or their technicians.

It is interesting to observe that these departments

are aware of the need for a greater and more specific educational background in this field, and yet at the same time in many instances refuse to alter the requirements to those positions to admit or attract technicians from outside the ranks of the Patrol who might be so qualified.

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- (1) Some of these states do not have state departments having full police powers, (limited to highway patrol and safety work only) and would actually have no need for a laboratory.
  - (2) These figures are probably all too high. The twenty-one man laboratory is definitely high. Actually, only three men, with five assistants are maintained as technicians. The remainder were photographer-troopers apparently. Same is probably true of the ten-man staff listed. Such employees should not have been listed as laboratory technicians.
- 

In addition to the questionnaire forms which were returned to the author at the time of this survey, additional material was received from a few departments, describing more completely the work and facilities of those departments. There was also received a number of letters in reply, in which personal comments were made by the individuals who had originally received the questionnaire. Of these, one was of particular interest, and sets forth in a comprehensive manner some of the problems which exist in regard to the Police and the Technical Laboratory.

This letter, as appropriate now as it was then, written by a man prominent in the field of Police Science Training, is presented on the following pages for the in-

terest of the reader:

September 20, 1940

Mr. John E. Davis  
2400 Haste Street  
Berkeley, California

Dear Mr. Davis:

Your letter of September 11, 1940, came to my attention for reply. I am attaching hereto the questionnaire. However, there is some additional comment I would like to make on the subject that may be of some value to you in your study.

There has been a decided trend in the past few years toward the acceptance of scientific aid in law enforcement, particularly on the part of the smaller departments. This trend has naturally paralleled the progress made in the selection and training of police personnel over the same period of time. However, while police departments generally recognize the importance of police laboratory service, only the larger departments have been able to avail themselves of the service. There is at present dire need not only for developing the existing laboratory facilities but for expanding the availability of the service to the smaller law enforcement agencies including the sheriff, the county prosecutor, and the smaller municipalities.

The organization and administration of a modern police laboratory involves many factors that are not instantly apparent in a theoretical study of the service. Factors that must be seriously considered if we expect to show progress in the particular field of scientific investigation.

First we must recognize the work of the laboratory as an extension of the work of the criminal investigator, rather

than as supplanting his activity in that regard. It is true that there is much to be desired even in the practical detection work of most departments, yet we can not overlook the fact that a close tie exists between ordinary criminal investigative techniques and the work of the laboratory expert.

Second and perhaps the most perplexing factor is the economic aspects of this particular phase of police work. To equip and maintain a modern police laboratory, able to render complete and final service in all matters that ordinarily come to the attention of the average police department during the period of any one year, would be an expensive undertaking. If we reflect upon the rapidly increasing police department budgets occasioned by reason of the many additional activities that are being assigned to the police agency, we can not fail to be impressed by the fact that it is not economically expedient for the average municipal police department to install full police laboratory facilities.

In consideration of the problems presented by the above factors, we have learned from experience that something more is required in establishing a police laboratory than to merely engage a chemist or medically trained man to do the technical work. Ideally the police laboratory should be manned by men of mature experience in all phases of criminal investigation and the legal principals of criminal law procedure as well as being competent in laboratory technique. At the present time men who can measure up to the requirements set out above are few in number. From your letter, I believe you are doing at the University of California what needs to be done at many of our state universities in order to supply the urgent need. It seems to me that the academic training set out in your letter, with its particular attention to the specific application to police laboratory service will equip the student with the proper technical training; then all that remains is to provide some manner of training of the individual in the practical problems of criminal investigation and criminal pros-



ecutions.

The second problem is more difficult of disposition. As stated before, the full use of police laboratory service has been and is at present restricted because of the unavailability of the service to the major portion of the agencies concerned in law enforcement. Yet those who control the purse strings of local and state government are inclined to recognize only tangible needs.

It seems that ideally the several states should provide police laboratory facilities for all law enforcement agencies within their respective boundaries, thus being instantly available to the smallest unit as well as the larger urban centers, and I believe we can cope with the economic obstacles present, by a plan of development that would be progressive in nature, expanding in scope as the demand for the service increased. This would necessitate certain limitations of physical organization of the State Police Laboratory in the beginning, yet I believe by using present available facilities in other branches of state service full laboratory facilities could be made available to law enforcement right from the start. This could be accomplished by organizing within each state a Medico-Legal Institute, in which the Medical Schools and Science Departments of State Universities would unite with law enforcement in providing the proper service. Thus the State Police Laboratory in the beginning would confine its activity to those techniques that are at present most in demand by enforcement investigators, looking to the Medical Schools and Universities to supply the occasional services of the Microscopist, Toxicologist, Physicist, etc. Then as the demand for a specific service grew to a point where full time services of the particular scientist was essential, the laboratory personnel could be expanded to include the essential service.

These are but personal opinions based upon an humble experience in practical police investigation and in the police investigation and in the police training field. I am

sincerely interested in the work you are doing in California and I would be grateful for additional information of a more detailed nature if the same can be supplied.

Respectfully,

Don L. Kooker,  
Supervising Lieutenant  
Division of Education  
Indiana State Police

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\*  
\* TECHNICAL NOTE \*  
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\* While the fine-grain, high-contrast "Microfile" \*  
\* film is primarily suited to copy work, it may also be \*  
\* used in photomicrograph--particularly in those in- \*  
\* stances where a fine-grain film should be utilized, \*  
\* but is not available otherwise. In the photographic \*  
\* reproduction of certain microscopic objects, it be- \*  
\* comes desirable to prepare highly enlarged prints, in \*  
\* which graininess is objectionable. For example, in \*  
\* photographing spermatozoa, it is often difficult to \*  
\* obtain a final print enlargement of two or three thou- \*  
\* sand diameters without losing much due to graininess. \*  
\* We have found that under such circumstances as these \*  
\* that microfilm serves quite well. Although a much \*  
\* slower film than Panatomic-X, exposures of as short as \*  
\* five seconds with a bright light source (oil immersion \*  
\* objective) result in good negatives. The high contrast \*  
\* coupled with its relative insensitivity to red rays \*  
\* makes this film especially adaptable to the photograph- \*  
\* ing of red-stained sperm cells, etc. \*

\* JED \*  
\*  
\*\*\*\*\*

QUESTIONS and ANSWERS

on

- (1) Documents (handwriting, typewriting, inks, papers etc.)
- (2) Firearms Identification
- (3) Photography, and Photomicrography

By Louis A. Waters  
Firearms and Documents Examiner  
351 South Warren Street  
Syracuse, New York

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This is to announce a new section to be included hereafter in THE TECHNICIAN. Mr. Waters, an experienced documents and firearms examiner, has kindly offered to handle this section, as a means of assisting other Police Laboratory Technicians in the analyses necessitated by evidence of the types listed above.

Any technician desiring information along any of these lines may feel free to consult Mr. Waters in that respect.

All questions should be sent directly to him at his Syracuse address, where they will be given his careful consideration. In order that others may have the opportunity of reviewing both the questions and answers involved, we will then print in this section the opinions offered by him.

It is to be remembered that all answers given represent Mr. Water's own views, based on his long personal experience in the work, and do not necessarily represent the opinions either of the publishing laboratory, nor of the departments which he represents.

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CHEMICAL MICROSCOPY

J.E.D.

In response to our recently initiated section on Chemical Microscopy, we have received the following letter:

November 12, 1943

The Technician  
Missouri State Highway Patrol  
Jefferson City, Missouri

Gentlemen:

I have just been reading the October issue of "The Technician" and am glad to see that you are beginning a section on chemical microscopy.

For the benefit of your readers who are concerned with testing for alkaloids, I would like to call attention to two highly useful sources of information.

1. "Micro-chemical tests for alkaloids," by C. H. Stephenson.
2. "Chemical Microscopy of some toxicologically important alkaloids," by W. F. Whitmore and C. A. Wood.

The first is a bound volume, while the latter is a Ph.D. contribution from the Polytechnic Institute of Brooklyn, New York. Both contain numerous photographic reproductions of crystal forms of various alkaloids with various test reagents.

For my own benefit, I would appreciate any information rel-

ative to crystal forms of members of the barbituric acid series with test reagents. I have considerable data on chemical tests but only a few scattered crystal tests. Also I would like to receive information in relation to tests (of whatever kind) for marihuana. Is there a better test than the Beam Test?

Sincerely,

RALPH E. STANTON, Ph.D.  
Toxicologist

- - -

If any of our readers is aware of any satisfactory micro-chemical tests for the barbiturates, we should appreciate it if that information would be forwarded to this department for publication.

We have carried on correspondence with other technicians in regard to this problem. The general consensus of opinion seems to be that there are no satisfactory tests of this nature, except for those barbiturates which have an original crystalline form -- barbital, sodium pentobarbital, amytal, etc. -- in which the "iodine-iodide" reagents, particularly zinc-chlor-iodide give brownish crystals of diamond shape, and of "butterfly" aggregates. Even this test while the crystals are quite "characteristic" -- is not overly sensitive, and may require high concentration or especially careful technique before positive tests result.

As to the non-crystalline barbiturates, these reagents usually give only a globular precipitate. Even the color tests which have been developed for barbiturates are not very satisfactory. We recently began a series of tests on barbiturates with a number of different reagents, but up until the time when this work was temporarily stopped, not a single crystalline reaction had been obtained.

Re: The test for marihuana, we are acquainted only with Beam's Test. If any other technician is familiar with a different and better test, we should appreciate that information.

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THE MERCK INDEX, PUBLISHED BY MERCK & CO. INC.,  
RAHWAY, NEW JERSEY, CONTAINS A NUMBER OF MICOR-CHEM-  
ICAL TESTS FOR BOTH ORGANIC AND INORGANIC MATERIALS. (DOUBLE SPACE)

IN THE A.O.A.C. MANUAL THERE ARE TO BE  
FOUND A NUMBER OF ACCEPTED (OFFICIAL OR TEN-  
TATIVE) TESTS FOR VARIOUS DRUGS AND CHEMI-  
CALS.

CHEMICAL MICROSCOPY

J.E.D.

- (4) Nickel, and Cobalt salts, in a strong ammoniacal solution give with a solution of Potassium Iodide, numerous crystals having an appearance very similar to crystals of arsenic trioxide. They show up as clear double-pyramids, cubes, and hexagonal crystals, clear, but with very dark appearing borders and sides. (Light refraction) They disappear as the ammonia evaporates, and reprecipitate upon further additions of ammonium hydroxide. Copper and zinc do not so react. They may be colored brown in the presence of an iodine-KI solution.

J.E.D.

- (5) Hexamine (urotropine) gives with Wagner's or Florence's reagent light to dark brown hexagonal and rectangular crystals. In basic solution the crystals are yellow and are of different form, being feathery.

J.E.D.

- (6) Hexamine reacts with a great number of substances and ions, giving numerous different characteristic crystals. Chamot and Mason, in their "Chemical Microscopy" have listed many of these. Another interesting reaction may be observed in the crystals produced by a fairly concentrated solution of a copper salt in hydrochloric acid, with hexamine. The crystals are generally elongated hexagonal in shape, and of lemon yellow color. The pointed ends may become rounded off or squared so that the crystals appear rectangular. They become quite large.

J.E.D.

OF INTEREST:

In order to effect a closer cooperation between police laboratories throughout the country, one of our readers has made the suggestion that the various technicians offer their services, on a cooperative basis, to other workers. This seems to us an excellent suggestion, and the procedure should prove advantageous to all concerned if put into effect.

If any other laboratory is interested, we should be pleased to announce the names of such departments in THE TECHNICIAN, provided indication is given as to the particular types of examinations which may best be so made by those laboratories.

It is to be understood that this is not to be considered as an offer by any laboratory to perform analyses which would be likely to involve legal entanglements (as in case work etc.), for any outside department. Nor is it an offer to perform examinations which would ordinarily be possible in the laboratory seeking assistance. Rather, it will be an offer on the part of individual technicians to assist other with problems encountered; in the identification of materials which have not been successfully analyzed in the laboratory in which originally received; in offering suggestions as to procedures which might be followed in examining certain materials; in making available (in effect) information, standards and collection files, etc. which would not be maintained by most laboratories; or in performing analyses not possible in those laboratories because of a shortage of equipment.

For example, one department might offer to run spectrographic determinations, another to make available files of collected specimens of typewriting, cordage, fibers, explosives, ammunition, wood, pollen grains, etc. etc.

Any such examinations made, and any reports or opin-



ions offered would necessarily be considered non-official, as representing the opinions of the individual technicians only, and without obligation of the part of anyone concerned. Obviously such work as was performed would be done after the laboratory consulted had completed its own case-work etc., and might therefore result in delayed reports. Further, the laboratory offering its services could not be held responsible for the specimens submitted to them for examination. If you are willing to so offer your services, please notify the Editor of this publication.

There would be no charge for these services except insofar as might be necessary to cover the bare costs of materials used, particularly where such items constituted a considerable sum.

In any event, in submitting samples to any of these laboratories, they should be accompanied by a sufficient amount of information to indicate exactly what has been done to the specimen so far, the circumstances under which found, etc., or any other pertinent data regarding it.

Should this service actually be established between a number of different laboratories, we should appreciate receiving notices from the technicians concerned as to the nature of the services being requested, and of the results. Only by this means can we determine whether the practice has value or is being utilized properly.

THE EDITOR